

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Kauschke, et al.

DIVISIONAL OF

Serial No. : 09/460,660

Filed : December 13, 1999

For : NONWOVEN WITH NON-SYMMETRICAL
BONDING CONFIGURATION

Examiner : Pratt

Group Art Unit : 1771

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application, please amend the specification thereof as follows:

Rewrite the paragraph beginning at page 1, line 3, as follows:

This is a divisional of U.S. Patent Application No. 09/460,660, filed December 13, 1999, itself a continuation-in-part of U.S. Patent Application No. 09/374,825, filed August 13, 1999.

Rewrite the paragraph beginning on page 9, line 7, as follows:

Utilizing a uniform diamond bonding point shape with a non-uniform bonding point pattern, specifically, a center-to-center separation of bonding points in the CD

(Δ CD) that is approximately 3.5 times greater than the center-to-center separation of bonding points in the MD (Δ MD), nonwoven fabrics of various weights (gsm or grams per square meter) were prepared and two inch wide by five inch long samples were tested for both elongation and tensile strength utilizing the EDANA test method ERT 20.2-89. The tests yielded the following results:

Basis Weight	10 gsm	15 gsm	20 gsm
MD tensile N	18.19	20.25	27.95
MD elongation %	75.83	70.40	71.66
CD tensile N	8.50	11.48	16.07
CD elongation %	88.75	92.51	94.67

Rewrite the paragraph beginning at page 10, line 6, as follows:

While the embodiments described hereinabove utilize bonding points 20 which are circular 22 or oval 24, it will be appreciated that a wide variety of shapes and configurations may be used for the bonding points 20. Indeed, bonding points of different shapes and configurations may be used on a single fabric. Similarly, while a variety of non-symmetrical bonding configurations have been shown in the various embodiments, it will be appreciated that other non-symmetrical configurations may be used instead. The critical limitation is that the shaping and configuration of the bonding points and/or the particular bonding pattern create a fabric which meets the goal of the present invention - namely, a high percent elongation in the first direction (typically the CD) relative to a low percent elongation in the second direction (typically the MD).

Rewrite the paragraph beginning at page 10, line 18, as follows:

The nonwoven fabric of the present invention is preferably formed by the selective bonding of substantially randomly oriented fibers initially providing a uniform fiber density in both the MD and CD so that any distinction between the MD and the CD properties arises out of the selective bonding process of the present invention. However, the selective bonding process of the present invention may also be applied to a nonwoven fabric which does not have a uniform fiber density in both the MD and the CD. See the inventor's copending U.S. Patent Application No. 09/373,826, filed August 13, 1999 entitled "Nonwoven Fabric With High CD Elongation And Method Of Making Same"). Where the non-uniform fiber density of the initial nonwoven fabric promotes a greater percent elongation in the CD than the MD, the use of the selective bonding pattern merely enhances the elongation ratio (that is, increases the ratio of elongation in the CD to elongation in the MD). Where the non-uniform density of the initial nonwoven fabric promotes a greater percent elongation in the MD than in the CD, the selective bonding of the present invention must be effective to overcome the initial bias and still cause the fabric to have a greater percent elongation in the CD than in the MD.

Rewrite the paragraph beginning at page 11, line 14, as follows:

An unexpected attribute of the fabric is an increased bulk density resulting in enhanced softness compared to symmetrically bonded nonwovens. In one example, a symmetrically bonded 15 gsm polypropylene spunbond fabric had one-half the thickness compared to a 15 gsm polypropylene spunbond fabric when bonded with the non-symmetrical pattern described herein.

REMARKS

Claims 1-25 are presented for examination. Method Claims 1-25 correspond to product Claims 1-25 of copending U.S. Patent Application No. 09/460,660.

The Specification is amended at page 1 to identify parent Application No. 09/460,660 as well as grandparent Application No. 09/374,825, at page 9 to introduce symbols used in FIGS. 1, 2 and 3, at page 10 to eliminate a characterization of the bonding points 20 as possibly rectangular (not shown in the drawing) and to provide the missing application number, and at page 11 to correct a typographical error.

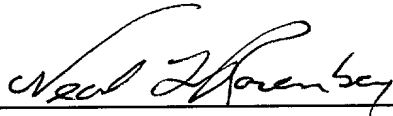
Applicant encloses from grandparent Application No. 09/374,825 a three page Information Disclosure Statement, two one-page Information Disclosure Statements and two one-page Notices of References Cited. Comparable Information Disclosure Statements (with references) were filed in parent Application No. 09/460,660.

In view of the above amendments and remarks, a prompt and favorable action is respectfully requested.

Respectfully submitted,

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October 5, 2001

By: 
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Registration No.: 21,088

REDLINED SPECIFICATION CHANGES

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Rewrite the paragraph beginning on page 9, line 7, as follows:

Utilizing a uniform diamond bonding point shape with a non-uniform bonding point pattern, specifically, a center-to-center separation of bonding points in the CD (ΔCD) that is approximately 3.5 times greater than the center-to-center separation of bonding points in the MD (ΔMD), nonwoven fabrics of various weights (gsm or grams per square meter) were prepared and two inch wide by five inch long samples were tested for both elongation and tensile strength utilizing the EDANA test method ERT 20.2-89. The tests yielded the following results:

Basis Weight	10 gsm	15 gsm	20 gsm
MD tensile N	18.19	20.25	27.95
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CD elongation %	88.75	92.51	94.67

Rewrite the paragraph beginning at page 10, line 6, as follows:

While the embodiments described hereinabove utilize bonding points 20 which are circular 22[,] or oval 24 [or rectangular 24'], it will be appreciated that a wide variety of shapes and configurations may be used for the bonding points 20. Indeed,

bonding points of different shapes and configurations may be used on a single fabric. Similarly, while a variety of non-symmetrical bonding configurations have been shown in the various embodiments, it will be appreciated that other non-symmetrical configurations may be used instead. The critical limitation is that the shaping and configuration of the bonding points and/or the particular bonding pattern create a fabric which meets the goal of the present invention - namely, a high percent elongation in the first direction (typically the CD) relative to a low percent elongation in the second direction (typically the MD).

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The nonwoven fabric of the present invention is preferably formed by the selective bonding of substantially randomly oriented fibers initially providing a uniform fiber density in both the MD and CD so that any distinction between the MD and the CD properties arises out of the selective bonding process of the present invention. However, the selective bonding process of the present invention may also be applied to a nonwoven fabric which does not have a uniform fiber density in both the MD and the CD. See the inventor's copending U.S. Patent Application No. 09/373,826, filed August 13, 1999 entitled "Nonwoven Fabric With High CD Elongation And Method Of Making Same"). Where the non-uniform fiber density of the initial nonwoven fabric promotes a greater percent elongation in the CD than the MD, the use of the selective bonding pattern merely enhances the elongation ratio (that is, increases the ratio of elongation in the CD to elongation in the MD). Where the non-uniform density of the initial

nonwoven fabric promotes a greater percent elongation in the MD than in the CD, the selective bonding of the present invention must be effective to overcome the initial bias and still cause the fabric to have a greater percent elongation in the CD than in the MD.

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An unexpected attribute of the fabric is an increased bulk density resulting in enhanced softness compared to symmetrically bonded nonwovens. In one example, a symmetrically bonded 15 gsm polypropylene spunbond fabric had one-half the thickness compared to a 15 gsm polypropylene spunbond fabric when bonded with the [the symmetrical] non-symmetrical pattern described herein.